I. General Remarks Concerning This Response

Claims 1-36 are currently pending in the present application. No claims have been amended, added, or canceled in this response. Reconsideration of the claims is respectfully requested.

A set of formal drawings are being submitted by mail separately from this response.

II. Summary of Present Invention

A methodology for balancing demand for networked services in a distributed data processing system is presented. Each client is uniquely associated with a local service manager; one or more local service managers are located throughout a distributed data processing system, and each local service manager provides access to networked services for associated clients. Each local service manager is uniquely associated with a distributed service manager; one or more distributed service managers are located throughout the distributed data processing system, and each distributed service manager provides access to networked services for associated local service managers. A client sends a service request to its local service manager, which returns information about a matching service to the client after finding a matching service that has characteristics that match parameters in the request. If the local service manager does not have information about a matching service, then the request is forwarded to its associated distributed service manager. If the distributed service manager does not have information about a matching service, then the request is broadcast to all distributed service managers. If the distributed service manager has two or more matching services, then it performs a load balancing operation to select a best service to be returned.

III. 35 U.S.C. § 102(b)–Anticipation–*Gehr et al.*

The Office action has rejected claims 1-11, 13-23, and 25-35 under 35 U.S.C. § 102(b) as anticipated by Gehr et al., "Dynamic server switching for maximum server availability and load balancing", U.S. Patent No. 5,828,847, filed 04/19/1996, issued 10/27/1998. This rejection is respectfully traversed.

Independent claim 1 is directed to a method, whereas independent claim 13 is directed to a corresponding apparatus, and independent claim 25 is directed to a corresponding computer program product. The rejection of claims 1, 13, and 25 reads:

> As per claims 1, 13, and 25, a method, an apparatus, and a computer program product of balancing a workload across a plurality of servers, the method comprising the steps of:
>
> responsive to a request from a requesting client for a distributed service, forwarding the request to a first distributed service manager associated with the requesting client;
>
> determining whether the first distributed service manager has information about the distributed service (corresponds to the dynamic server switching system maintaining a list in each client which identifies the primary server for that client, abstract);
>
> if the first distributed service manager has information about the distributed service, retrieving the information about the distributed service (corresponds to the event that the client does not have requests served by the designated primary server or the designated communication method, the system traverses the list to ascertain the identity of the first available alternate server-communication method pair. Abstract) and (this routing information functions to load balance on a per client basis since each client has its own routing list. Col. 4, lines 22-25)[;]
>
> if the first distributed service manager does not have information about the distributed service, retrieving information about the distributed service from a second distributed service manager and caching the retrieved information at the first distributed service manager; and
>
> sending the retrieved information to the requesting client. (Client-Server System Philosophy, in the event that the client does not have requests served by the designated primary server or the designated communication method, then traverses the list to ascertain the identity of the first available alternative server-communication path pair, col. 4, lines 58-66) and (see Fig. 5a and Fig. 5b).

The Office action has presented a common rejection for independent claims 1, 13, and 25 because they have corresponding elements. Applicant hereinbelow focuses on independent claim 1 and its dependent claims, but Applicant's arguments are applicable to claims 13 and 25 and their dependent claims.

A proper anticipation rejection finds each and every element of a claim within a single prior art reference. However, it should be clear by reference to the copy of the rejection hereinabove that the rejection has failed to address the first element of claim 1, i.e. "responsive to a request from a requesting client for a distributed service, forwarding the request to a first distributed service manager associated with the requesting client". In addition, the rejection has also failed to address the fourth element of claim 1, i.e. "if the first distributed service manager does not have information about the distributed service, retrieving information about the distributed service from a second distributed service manager and caching the retrieved information at the first distributed service manager". Applicant asserts that the rejection has not addressed these claim elements with respect to Gehr et al. because the rejection is implicitly admitting that these features are not disclosed by Gehr et al.. Since at least one element of claim 1 is not disclosed by Gehr et al., Gehr et al. cannot anticipate claim 1. Hence, the rejection of claim 1 is deficient and is not a proper anticipation rejection. The anticipation rejection, though, is deficient for additional reasons that are discussed hereinbelow.

With respect to the third element of claim 1, the rejection states that Gehr et al. discloses the claimed feature at column 4, lines 22-25, which reads: "This routing information functions to load balance on a per client basis since each client has its own routing list." The operations that are performed at a client

are more apparent when one refers to a larger portion of Gehr et al. at column 4, line 1, to column 5, line 4 (emphasis added):

> The overall dynamic server switching system comprises a client communication interface Ci associated with each client process as well as optional centralized server switching process SSP, as is described in additional detail below. The dynamic server switching system functions to direct requests from clients C1-C11 to designated servers S1-S4 for execution of the requests. The data generated as a result of the server actions are then returned to the requesting client. It should be noted that a server S1-S4 can be self serving, in that it can also function as a client for some service requests.
>
> The initial routing of each request from a client is defined by a client communication interface Ci1-Ci11 which is part of or associated with each client process C1-C11. **The client communication interface Ci includes request routing data which designates the primary server for this client process as well as alternate servers for use when the primary server is unavailable.** Corresponding entries are included in this data which designate preferred communication methods between client-server pairs. Thus, the list entries uniquely define both a destination and a method of communicating with the selected destination. **This routing information functions to load balance on a per client basis since each client has its own routing list.** A server switching process SSP is shown as residing on processor P1. **The server switching process SSP functions to populate the client communication interfaces Ci1-Ci11 with data, update this data** and optionally provide a system operator with access to this data via terminal T. In this regard, the server switching process SSP can be a neuromorphic element which monitors interprocess communication activity in the data processing complex and revises the list entries in the client communication interface elements Ci as a function of the present state of the data processing complex. The selection of a neuromorphic processor, such as a neural network, provides the ability to learn the characteristics which are unique to the data processing system complex. In this manner, the server switching process SSP then function as the human system administrator would in managing the system maintenance.
>
> Client-Server System Philosophy
>
> In client-server system operations, multiple servers are provided to perform a particular function for the overall system, such as access to data stored in an automated cartridge library system, to ensure both that the

plurality of clients receive an adequate level of service and a high level of server availability is maintained. Each client directs requests to a designated primary server and multiple clients typically access each server. **The fault tolerance aspect of the system architecture of the dynamic server switching system makes use of a client communication interface based control which enables a client to simply redirect requests from an unresponsive server to a predetermined alternate server without the overhead of prior art systems. This is accomplished by maintaining data in the client communication interface Ci located in each client, which data identifies the primary server for that client and the preferred communication method as well as a hierarchy of successive alternate servers and communication method pairs.** In the event that the client does not have requests served by the designated primary server or the designated communication method, **the client communication interface traverses the list to ascertain the identity of the first available alternative server-communication method pair.** The client then uses this retrieved data to initiate future requests. When an alternate server is being used, the client periodically tests the primary server-communication method pair to determine whether the fault has been cleared. If so, the client reestablishes the originally selected primary server-communication method pair as the request route, while wrapping up the existing communications with the alternate server-communication method pair.

Although the rejection specifically states that "the system traverses the list ...", the action is clearly performed at the client. Applicant asserts that Gehr et al. does not disclose the third element of claim 1, notwithstanding the argument in the rejection that discusses the actions at the client. Applicant further asserts that the rejection has misinterpreted the claims; this misinterpretation is assisted by the fact that the rejection ignores two claim elements that further distinguish client-server interactions in the present invention from the system that is disclosed in Gehr et al..

Gehr et al. discloses a system in which a client performs the initial routing of a request from the client to a server based on its own routing list that is stored at the client. A special server process updates the client's list when necessary.

In contrast, the present invention discloses a system in which a client originates a request to a first service manager for information about a service, as recited in the first element of claim 1. The second element of claim 1 recites that the first service manager determines if it has the necessary information, and the third element of claim 1 recites that the first service manager retrieves the information if it has it. If the first service manager does not have the necessary information about the service, then the first service manager retrieves the information from a second service manager and caches it, as recited by the fourth element of claim 1. The retrieved information is then sent to the client, as recited by the fifth element of claim 1. Not only does Gehr et al. not disclose any features that are similar or analogous to the fourth element of claim 1, but Gehr et al. also does not disclose a series of steps that are similar or analogous to those performed at a distributed service manager or at some entity distinct from a client.

Moreover, Applicant asserts that the steps that are recited in claim 1 are not performed at a client, but the rejection of claim 1 improperly interprets the elements of claim 1 by referring to certain steps in Gehr et al. that are performed by the client. Although it is not explicitly stated with respect to claim 1, the argument in the rejection of claim 1 seems to be based on a supposed equivalency between a client and a server; for example, claim 4 explicitly states that Gehr et al. discloses "that a server S1-S4 can be self-serving in that it can also function as a client for some service requests". Assuming *arguendo* that a server performs steps that are similar to the second element and third element of claim 1, this is irrelevant with respect to the claim as a whole; the claim specifically recites that the request originates at a client and that the information is returned to the requesting client. Thus, even if a self-serving server were to perform something similar to two of

the claimed steps, there would be no need for the server to perform the other forwarding and sending steps as recited in claim 1 because the server is supposedly identical to the client, and there would be no need for the server to forward or send information to itself. Even though one must examine each element of a claim, one must also examine the claim as a whole, and the manner in which the rejection interprets claim 1 completely fails when all of the claim elements are considered together.

With respect to the other independent claims, the rejection of these claims continues to ignore multiple claim elements and to misinterpret the claim elements. Independent claim 3 is directed to a method, whereas independent claim 15 is directed to a corresponding apparatus, and independent claim 27 is directed to a corresponding computer program product. The Office action has presented a common rejection for independent claims 3, 15, and 25 because they have corresponding elements. Applicant hereinbelow focuses on independent claim 3 and its dependent claims, but Applicant's arguments are applicable to claims 15 and 27 and their dependent claims.

Independent claim 3 differs from claim 1 in a couple of respects. Most importantly, claim 3 recites more detail about the organization of entities within the data processing system. For example, the first and second elements of claim 3 recite:

> initializing one or more local service managers within the distributed data processing system, wherein each local service manager provides access to networked services for clients within the distributed data processing system, and wherein each client is uniquely associated with a local service manager;
>
> initializing one or more distributed service managers within the distributed data processing system, wherein each distributed service manager provides access to networked services to local service managers within the distributed data processing system, and wherein each local service manager is uniquely associated with a distributed service manager;

The rejection of claim 3 complete ignores these claim elements and fails to address them. Moreover, claim 3 recites that a distributed service manager interacts with a local service manager to return information about a networked service to the local service manager. The distributed service manager and the local service manager are distinct from a client, which is recited within dependent claim 4 as a distinct entity. The rejection again recites the argument about the operations of a client with respect to claim 3 and with respect to claim 4, but the rejection fails to explain what entities in Gehr et al. fulfill the roles of the distributed service manager and the local service manager in the present invention. Applicant asserts that it is not possible to present a proper anticipation argument based on Gehr et al. because Gehr et al. clearly does not disclose analogous or equivalent features to the present invention.

Dependent claims 5 and 6 recite claim elements that are similar to those that are recited in independent claim 1. The arguments that Applicant has provided hereinabove about the differences between the present invention and Gehr et al. are also applicable to dependent claims 5 and 6.

Dependent claim 7 recites a feature in which a a distributed service manager broadcasts a request for a networked service to all distributed service managers if the distributed service manager does not have the necessary information. Gehr et al. does not disclose a broadcast operation. In fact, the rejection of claim 7 merely repeats the same argument that was applied against claim 1 without attempting to explain how Gehr et al. discloses any features that are analogous or equivalent to the broadcast operation.

Gehr et al. clearly does not disclose features as required by the language of the claims of the present application. As stated at MPEP § 2131: "A claim is anticipated only if each and

every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Hence, for this and other reasons, Gehr et al. cannot be used as an anticipatory reference, and the rejection of the claims has been overcome, whereby Applicant requests the withdrawal of the rejection.

IV. 35 U.S.C. § 103(a)—Obviousness—*Gehr* in view of *Kadansky*

The Office action has rejected claims 12, 24, and 36 under 35 U.S.C. § 103(a) as unpatentable over Gehr et al. in view of Kadansky et al., "Dynamic optimization for receivers using distance between a repair head and a member station in a repair group for receivers having a closely knit topological arrangement to locate repair heads near the member stations which they serve in tree based repair in reliable multicast protocol", U.S. Patent Number 6,507,562 B1, filed 06/18/1999, issued 01/14/2003. This rejection is traversed.

Dependent claims 12, 24, and 36 recite further limitations that are not present within the independent claims from which they depend, such as network-related metrics, that are used within other dependent claims that recite features that concern load balancing. However, since the dependent claims incorporate the features of the independent claims, the rejections of the dependent claims are similarly deficient for the same reasons that were argued above with respect to the independent claims. The rejection relies on Kadansky et al. as disclosing these features about network-related metrics, but Kadansky et al. does not disclose the features in the independent claims.

Examiner bears the burden of establishing a *prima facie* case of obviousness

The examiner bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992). Only when a *prima facie* case of obviousness is established does the burden shift to the applicant to produce evidence of nonobviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). If the Patent Office does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of a patent. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Grabiak*, 769 F.2d 729, 733, 226 U.S.P.Q. 870, 873 (Fed. Cir. 1985). In response to an assertion of obviousness by the Patent Office, the applicant may attack the Patent Office's *prima facie* determination as improperly made out, present objective evidence tending to support a conclusion of nonobviousness, or both. *In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992).

Gehr et al. and Kadansky et al. clearly fail to disclose or to suggest at least one feature of the present invention as recited within each independent claim, notwithstanding the arguments presented by the Office action, thereby rendering Gehr et al. and Kadansky et al. incapable of being used as primary and secondary references as argued by the current rejection. Moreover, a hypothetical combination of Gehr et al. and Kadansky et al. would also fail to reach the claimed invention of the present patent application. As should be recognized, because both the primary and secondary references in the rejection fail to disclose or to suggest the claimed features against which the references were applied, and because the references fail to be

combinable to produce these claimed features, the rejection fails to fulfill the requirements of a proper obviousness argument.

With respect to claims 12, 24, and 36 of the present patent application, Applicant respectfully submits that it would not have been obvious for one having ordinary skill in the art to have used the applied prior art references to reach the claimed invention. Hence, a rejection of claims 12, 24, and 36 cannot be based upon the cited prior art to establish a *prima facie* case of obviousness. Therefore, a rejection of claims 12, 24, and 36 under 35 U.S.C. § 103(a) has been shown to be insupportable in view of the cited prior art, and the claims are patentable over the applied references. Applicant respectfully requests the withdrawal of the rejection of claims 12, 24, and 36.

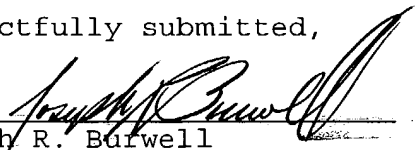
V. Conclusion

It is respectfully urged that the present patent application is patentable, and Applicant kindly requests a Notice of Allowance.

For any other outstanding matters or issues, the examiner is urged to call or fax the below-listed telephone numbers to expedite the prosecution and examination of this application.

DATE: September 15, 2004

Respectfully submitted,



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